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(54) **Floor sweeper**

(57) A floor sweeper has supporting pairs of wheels (not shown) driving a central roller brush (15). Dustpans (not shown) are provided between the wheels on either side of the brush (15). An end brush (17) is provided outboard of the wheels (12, 13) to project dust against a low skirt (22) which deflects dust particles into the path of the roller brush (15). The bristles of the end brush (17) may be longer than those of the roller brush and may be made of more flexible material.

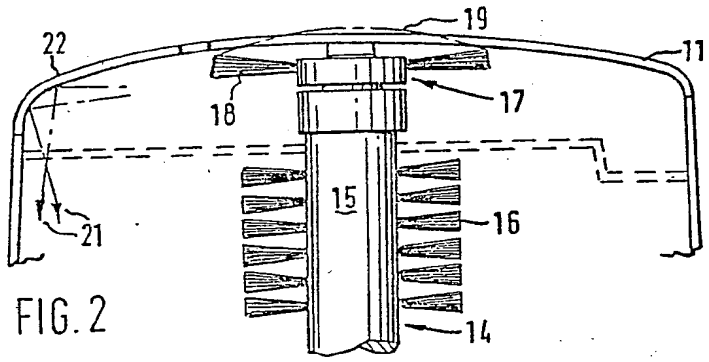

FIG. 2

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The drawing(s) originally filed was (were) informal and the print here reproduced is taken from a later filed formal copy.

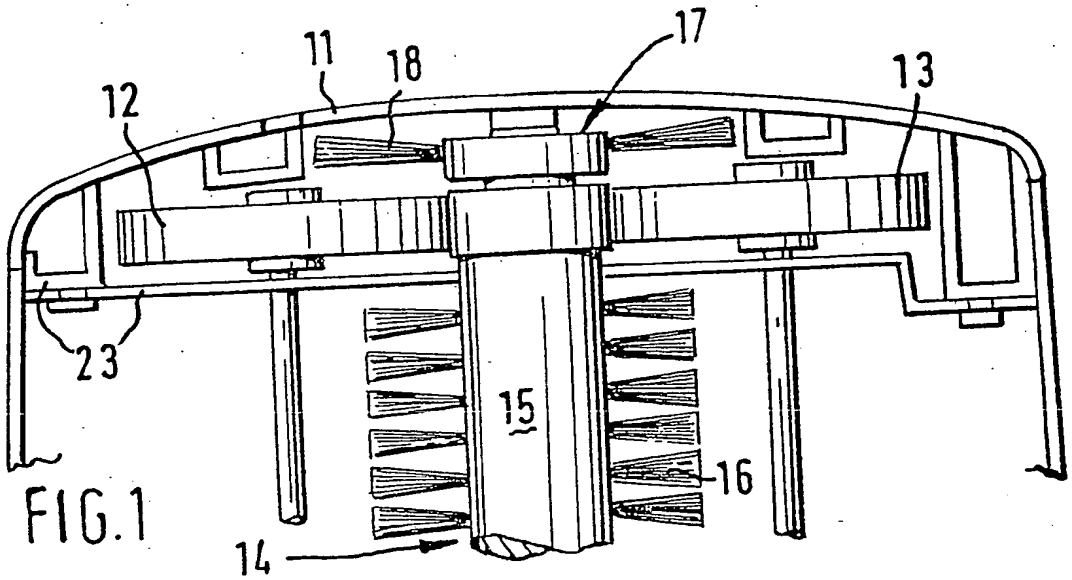

FIG.1

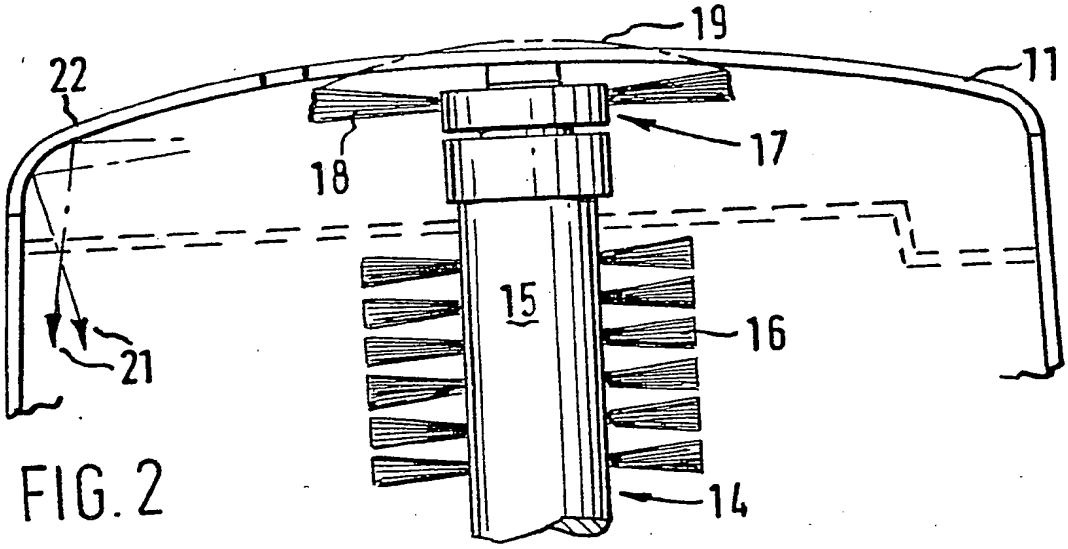

FIG.2

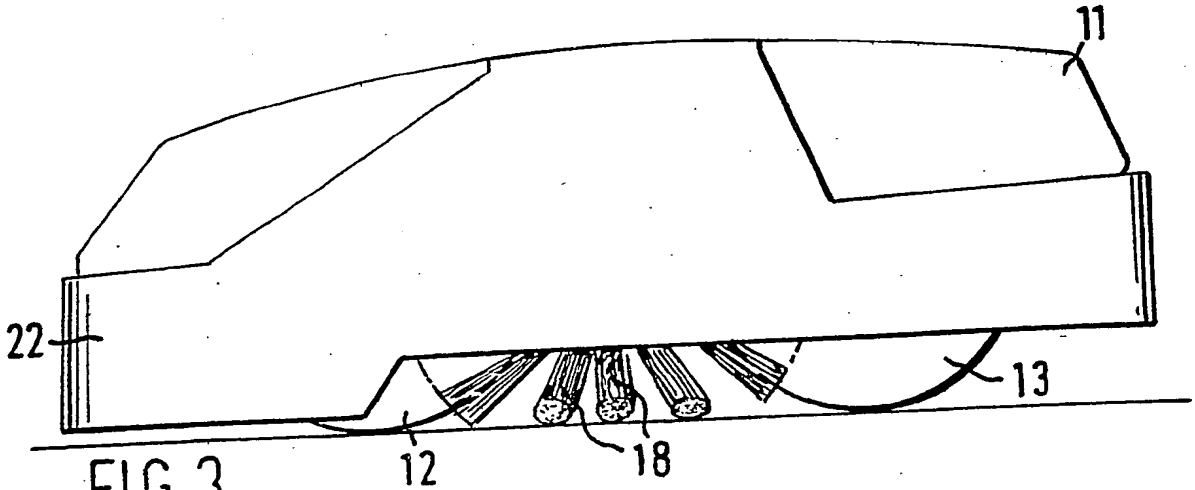

FIG.3

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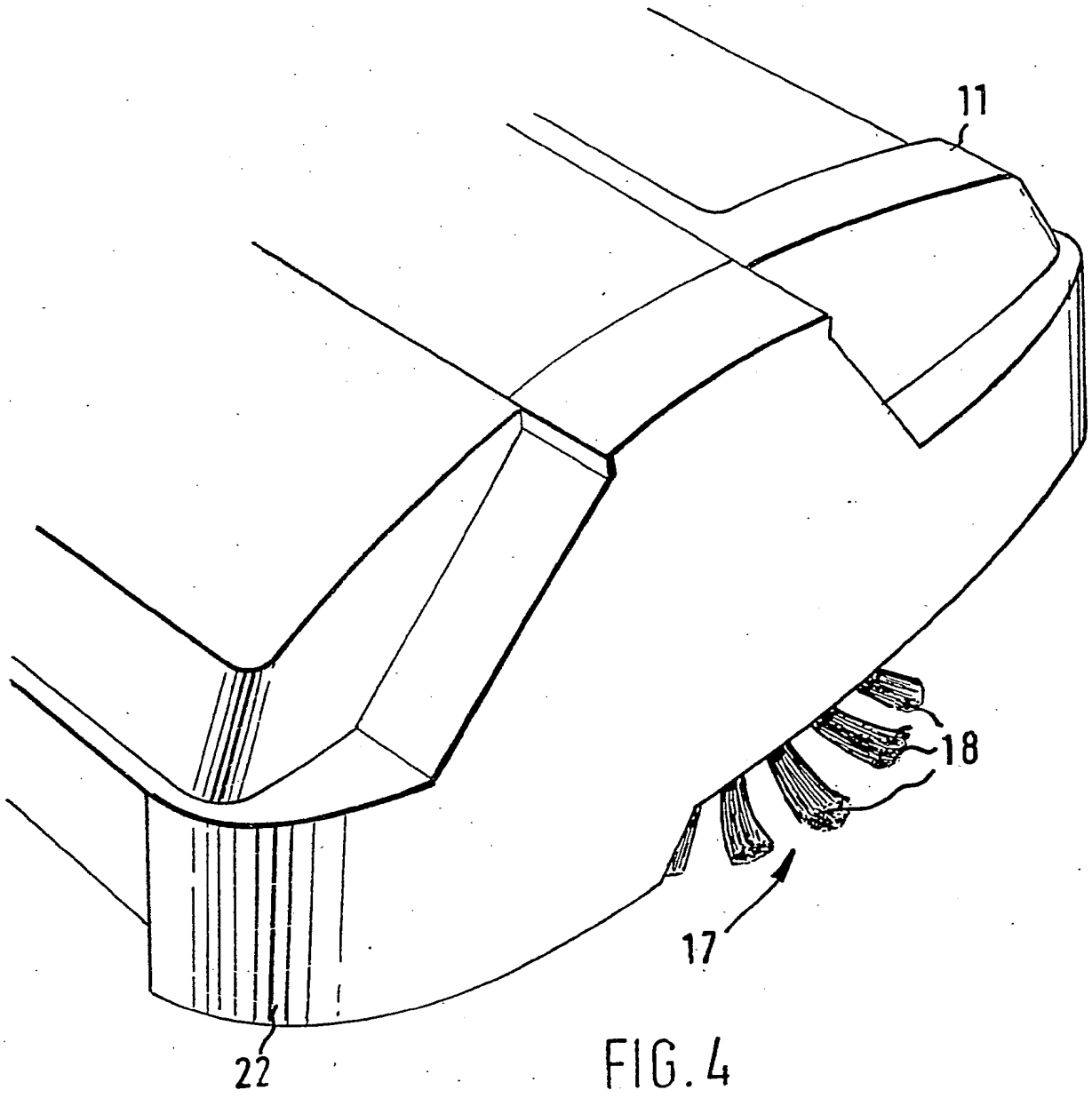

FIG. 4

SPECIFICATION

Floor Sweeper

This invention relates to floor sweepers.

Floor sweepers, sometimes known as carpet sweepers have been in use for many years and usually include at least one roller brush rotatable about a horizontal axis at right angles to the direction of movement of the sweeper to sweep debris into a dustpan of the sweeper. Four wheels in axle pairs are usually provided to support the sweeper, the wheels driving the roller brush by friction.

The roller brush is normally geared up with respect to the driving wheels in oder to improve the effectiveness of debris collection. Usually the roller brush and dustpan are transversely located between the driving wheels.

One problem with floor sweepers is that it is difficult to arrange for effective sweeping right upto a skirting board or wall.

It has been proposed in British Patent 1,361,323 to mount auxilliary brushes on the front corners of the sweeper to sweep outboard of the sweeper body but such corner brushes increase the cost and complexity of the floor sweeper substantially.

It has also been proposed to provide auxilliary brushes on the end of the roller brush and outboard of the driving wheels. Such end brushes can sweep effectively upto the skirting board but deposit debris in front of the end brush at the end of the sweeping track. End brushes stir the debris but cannot sweep into the dustpan since this is located between the sweeper wheels.

The present invention seeks to provide an improved floor sweeper of economical construction which gives effective sweeping right up to the skirting board.

According to the present invention there is provided a floor sweeper comprising a body, wheels to support the body for reciprocal movement, a dustpan, and roller brush means extending transversely of the body and adapted to be driven by the wheels, said roller brush means having a main brush to sweep debris into the dustpan and an end brush provided beyond the dustpan characterised thereby that deflector means are provided to direct debris projected in use from the end brush towards the main brush.

In this way debris outboard of the sweeper wheels is effectively bounced off a deflector into the path of the main brush to provide sweeping upto the skirting board. Normal reciprocation of the sweeper will ensure that the wheel tracks are effectively swept; practice being to move the sweeper gradually towards the skirting board thus ensuring that the area outboard of the wheel tracks is swept before the wheels move across into that area.

Deflection of debris towards the main brush overcomes the problem of prior art sweepers having end brushes whereby debris tends to be projected forwards and to accumulate at the end of the sweeper end brush track.

In one embodiment the end brush comprises a circular brush wheel having radially disposed bristles, the diameter of the end brush being greater than the diameter of the main brush.

This arrangement causes the bristles to flick off the floor as the end brush rotates, thus projecting the debris towards the deflector with sufficient momentum to bounce into the path of the main brush. Preferably the bristles are angled outwards to sweep the floor outboard of the sweeper body. The bristles may be effectively angled by tilting the end brush so that the end brush axis and main brush axis are at an angle, drive being provided by a flexible connection; or by arranging for the outermost bristles of the end brush to be angled outward or by some other convenient means.

The deflector means is preferably formed by a corner wall of the sweeper body but may alternatively be provided by a plate mounted inside the body.

In a further aspect of the invention, debris from the end brush is deflected directly into the dustpan.

Other features of the invention are disclosed in the following description of a preferred embodiment shown by way of example only in the accompanying drawings, in which:-

Figure 1 is a part plan view of an inverted floor sweeper according to the invention;

Figure 2 is a view corresponding to Figure 1 and showing the path of debris projected by the end brush;

Figure 3 is a side view of the sweeper and showing the debris deflector; and

Figure 4 is a three-quarter view of the sweeper from above and showing outward deflection of the edge brush bristles.

With reference to the drawings there is shown a sweeper body 11 having supporting wheels 12, 13 in axle pairs sand driving a roller brush 14. The diameter of the roller brush core 15 is less than that of the driving wheels 12, 13 so that the roller brush 14 is geared up to rotate faster than the wheels. Bristles 16 extend all around the periphery of the core but are partly omitted from Figures 1 and 2 for clarity.

Dustpans (not shown) are provided in the sweeper body on either side of the roller brush and disposed between the wheel pairs. Debris thrown up by the roller brush is deposited in the dustpans which may be opened for emptying by any convenient means; the dustpans are usually hinged about one edge to the sweeper body and held in a closed position for example by bias means or by a releasable latch.

A comb (not shown) may be provided to clean the bristles of the roller brush as it rotates. A pushing handle and bail may be attached to the sweeper body by any convenient method.

An end brush 17 is provided on each end of the roller brush to sweep outboard of the sweeper wheels 12, 13. The bristles 18 are angled slightly outward of the sweeper to project beyond the periphery of the sweeper body when in contact with the floor, as indicated by the dotted line 19. The bristles 18 are longer than those of the roller brush and may be made of more flexible material to flick the debris off the floor.

The front corners 22 of the body 11 are curved so

that debris projected by the end brushes 17 is directed into the path of the main roller brush 14 as shown by arrows 21. It should be understood that the deflector forms a low skirt to the sweeper body and that debris is projected below the internal supporting structure 23 of the sweeper and below the dustpans. Any debris deflected downwards by the sweeper before reaching the deflector will be projected again as the end brush moves forward. A smooth channel may be provided to reduce interference from the supporting structure of the sweeper to a minimum.

Although the end brush has been shown having a single row of bristles that is not the only practicable arrangement.

In an alternative embodiment debris deflected upward by the end brush could be channelled directly into the debris container. In such an arrangement the disposition of the sweeper wheels could be altered to provide free passage for the debris.

Deflectors could be provided at the front and at the rear of the sweeper body since the direction of brush rotation is reversed as the direction of sweeper movement is reversed. Alternatively known mechanisms for providing a single direction of roller brush rotation could be incorporated in the sweeper structure.

Although the invention has been described by reference to end brushes having bristles extending beyond the periphery of the sweeper body, effective sweeping can be obtained where the end brush bristles extend only to the periphery of the sweeper. Furthermore, by changing the respective flexibility of the main brush bristles and end brush bristles, the respective diameters of the main brush and end brush may be varied. For example the diameter of the end brush may be equal to or smaller than the main brush where the end brush has stiff bristles and the main brush has relatively soft bristles.

Clearly where the end brushes and main brush are not coaxial the relative diameters of the brushes must be chosed by experience to give effective sweeping.

CLAIMS

1. A floor sweeper comprising a body, wheels to support the body for reciprocal movement, a dustpan, and roller brush means extending transversely of the body and adapted to be driven by the wheels, said roller brush means having a main brush to sweep debris into the dustpan and an end brush provided beyond the dustpan characterised thereby that deflector means are provided to direct debris projected in use from the end brush towards the main brush.

2. A floor sweeper according to Claim 1, characterised thereby that said end brush comprises a circular brush wheel having radially disposed bristles, means being provided to direct the bristles of the end brush outwards of the main brush beyond the periphery of the sweeper body.

3. A floor sweeper according to Claim 1 or Claim 2, characterised thereby that the end brush is co-axial with the main brush.

4. A floor sweeper according to any preceding claim characterised thereby that the end brush is integral with the main brush.

5. A floor sweeper according to any preceding claim characterised thereby that an end brush is provided at each end of the roller brush means, respective deflector means being provided for each end brush.

6. A floor sweeper according to Claim 1, characterised thereby that the sweeper has two co-axial wheels to drive the roller brush means, the dustpan and the main brush being disposed between the wheels and an end brush being provided outboard of one of said wheels, deflector means being provided by the sweeper body for said end brush.

7. A floor sweeper according to Claim 6, characterised thereby that the sweeper has two pairs of wheels to drive the roller brush means, one dustpan being provided on each side of the main brush and between a respective pair of wheels, an end brush being provided on either end of said main brush outboard of said wheels, and deflector means being provided for each of said end wheels.

8. A floor sweeper according to any preceding claim, characterised thereby that the deflector means comprise a curved wall of the body.

9. A floor sweeper according to any preceding claim characterised thereby that said deflector means direct debris into said dustpan.

10. A floor sweeper substantially as described herein with reference to the accompanying drawings.

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